

# How my students ended up playing baseball with aliens

'Impact' of the NASA Astrobiology Minority  
Institution Research Support program on  
students from the University of Puerto Rico

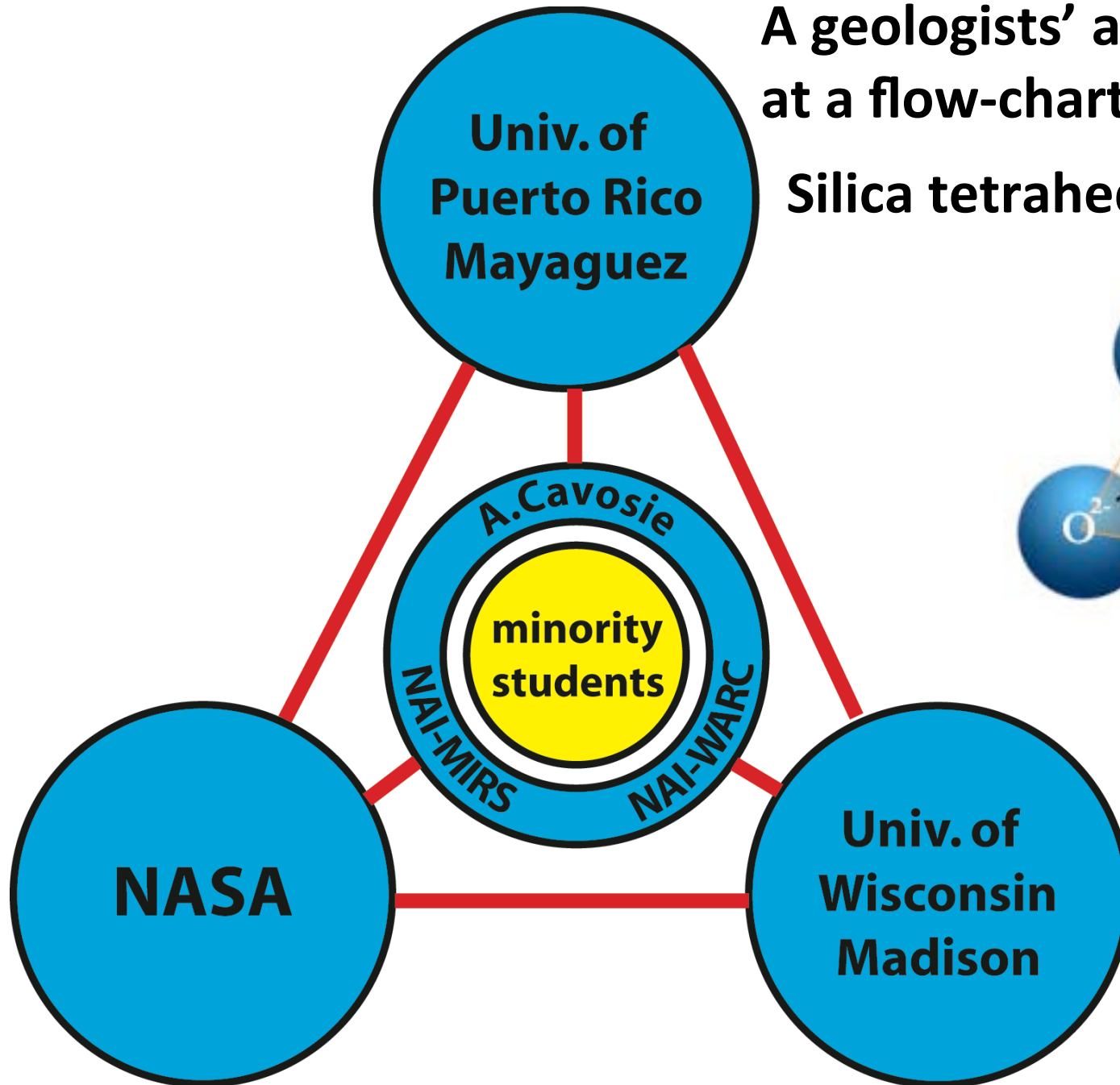
**Aaron J. Cavosie**

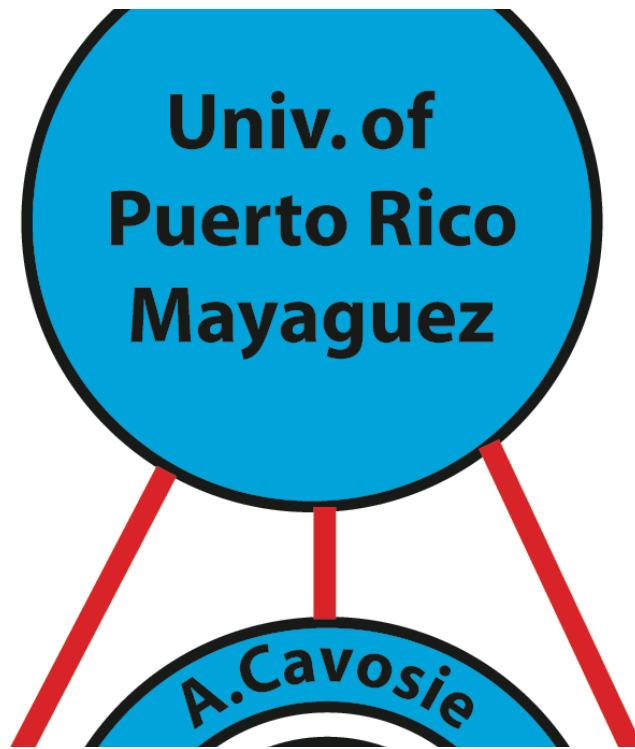
**Dept. of Geology**

**Univ. of Puerto Rico, Mayaguez**

**A geologists' attempt  
at a flow-chart...**

**Silica tetrahedron:  $(\text{SiO}_4)^{4-}$**





**Located on the west coast of PR**

**~13,000 students:**

**12,000 undergraduate**

**1,000 graduate students**

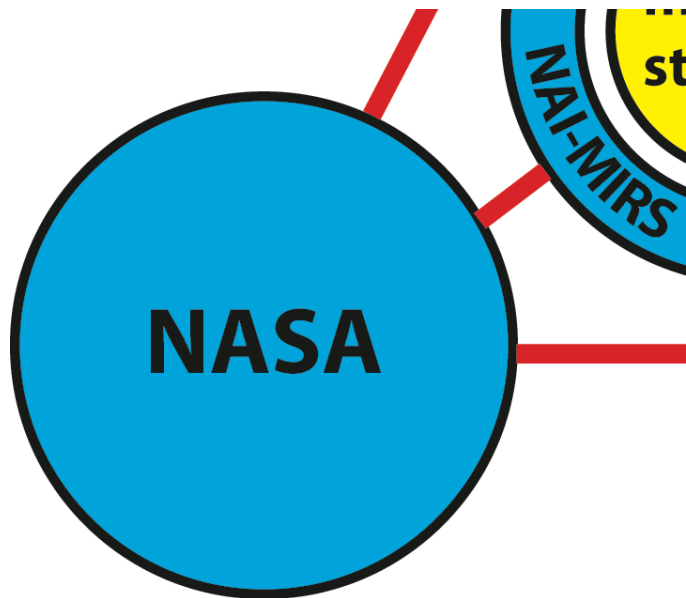
**A US minority serving institution...  
outside of the US mainland...  
in a native Spanish speaking land**

## **Dept. of Geology: BS & MS available**

**14 faculty members**

**135 undergraduate majors**

**18 graduate students**



## **The NASA connection**

**NASA Astrobiology Institute (NAI)**

**Minority Institute Research Support  
(NAI-MIRS program)**

**Sabbatical + Research support**

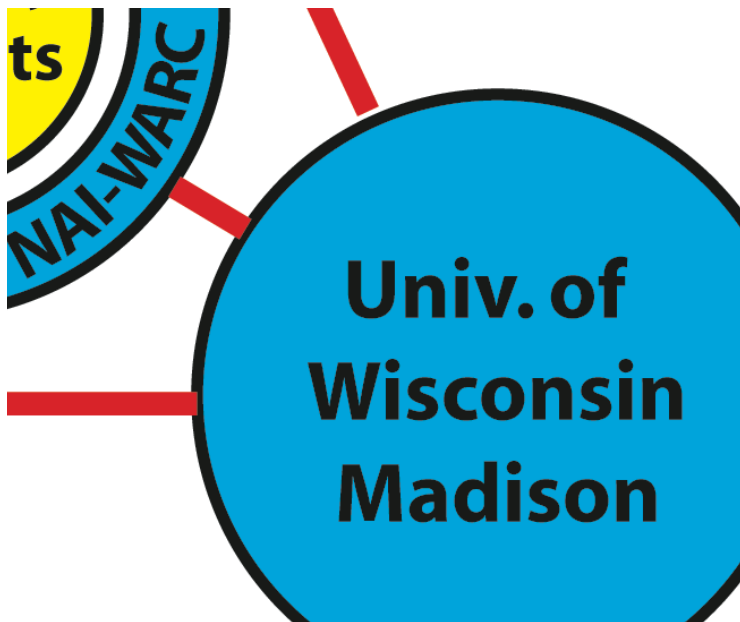
**-Awarded to Cavosie, 2009**

## **Cavosie NAI-MIRS experience, 2009**

**Conduct impact crater studies at Univ. of Wisc.**

**Involved 3 students; 3 interesting outcomes**

**Related research ongoing at UPRM**



**Univ. of Wisc. connection**

**Cavosie PhD, 2005**

**Awarded NAI Institute, 2005**

**WARC- Wisconsin Astrobiology  
Research Consortium**

## **Benefits of UPRM-UW collaboration**

**Research opportunities for UPRM students**

**Work with faculty and UW students**

**Access to world-class research facilities**

**Graduate opportunities post-UPRM**

# **The NAI-MIRS 2009 summer experience**

**6 weeks spent at UW Madison, May-June 2009**

**3 students participated for 2-4 week periods**

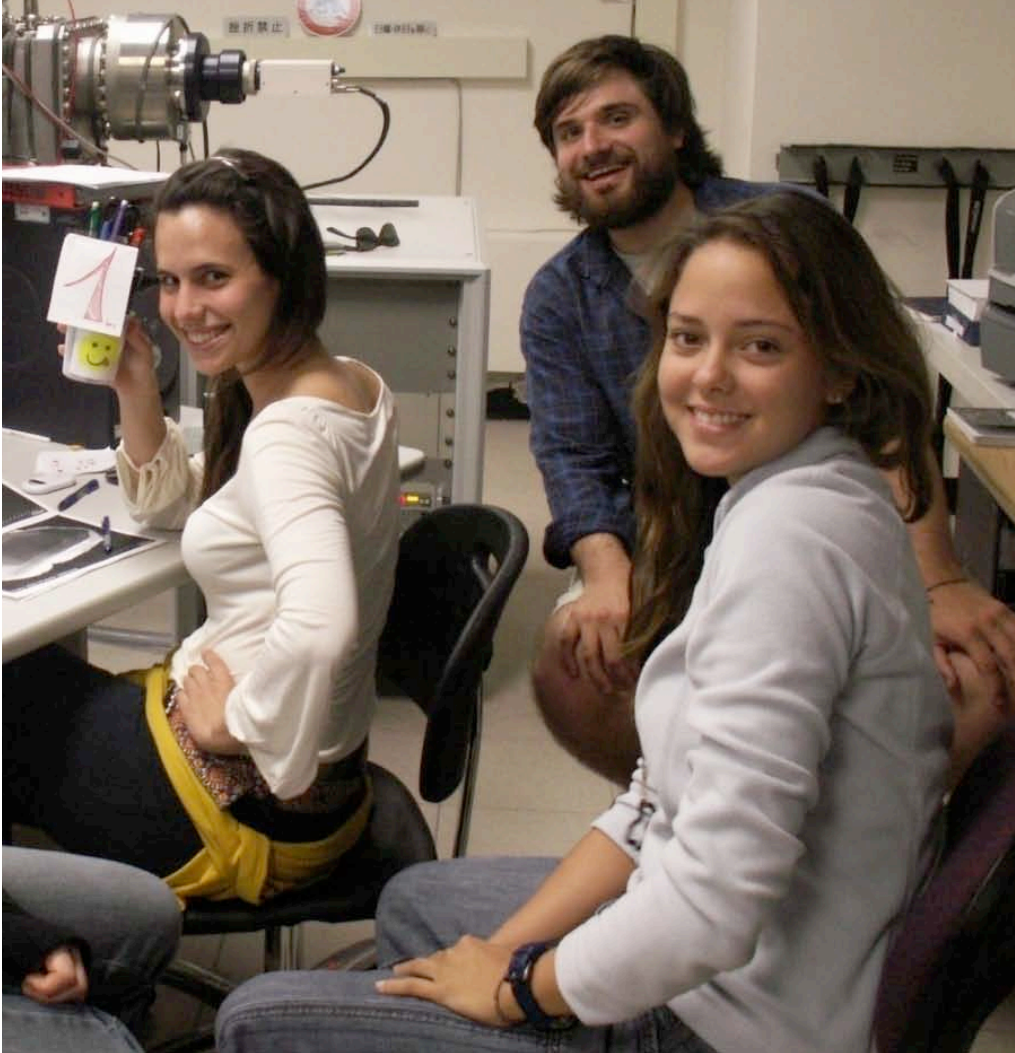
## **The Astrobiology research**

**“Developing methods to identify impact evidence from the early Earth: Isotopic and structural characteristics of detrital shocked zircon from the Vredefort Dome (South Africa)”**

**Investigate how evidence of giant meteorite impacts is preserved in the geologic record.**

**Deciphering environmental conditions on the early Earth during the rise of life (~4.0 Byrs ago)**

# The 3 NAI-MIRS student participants

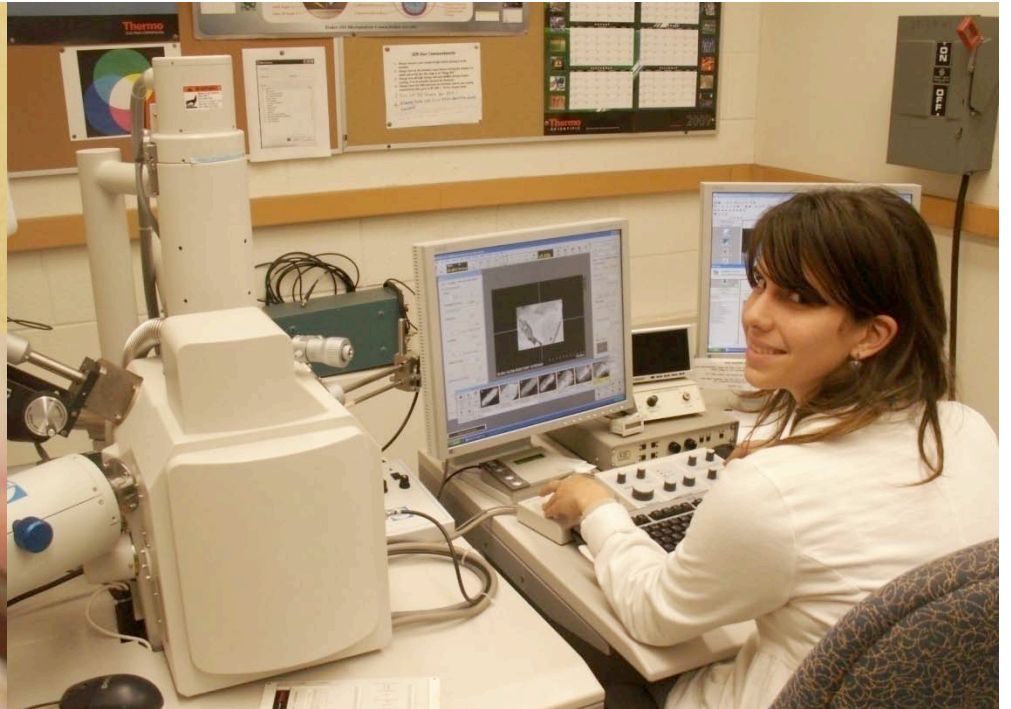


**Raiza Quintero-**  
now an MS student at UW

**Timmons Erickson-**  
now a MS student at UPRM

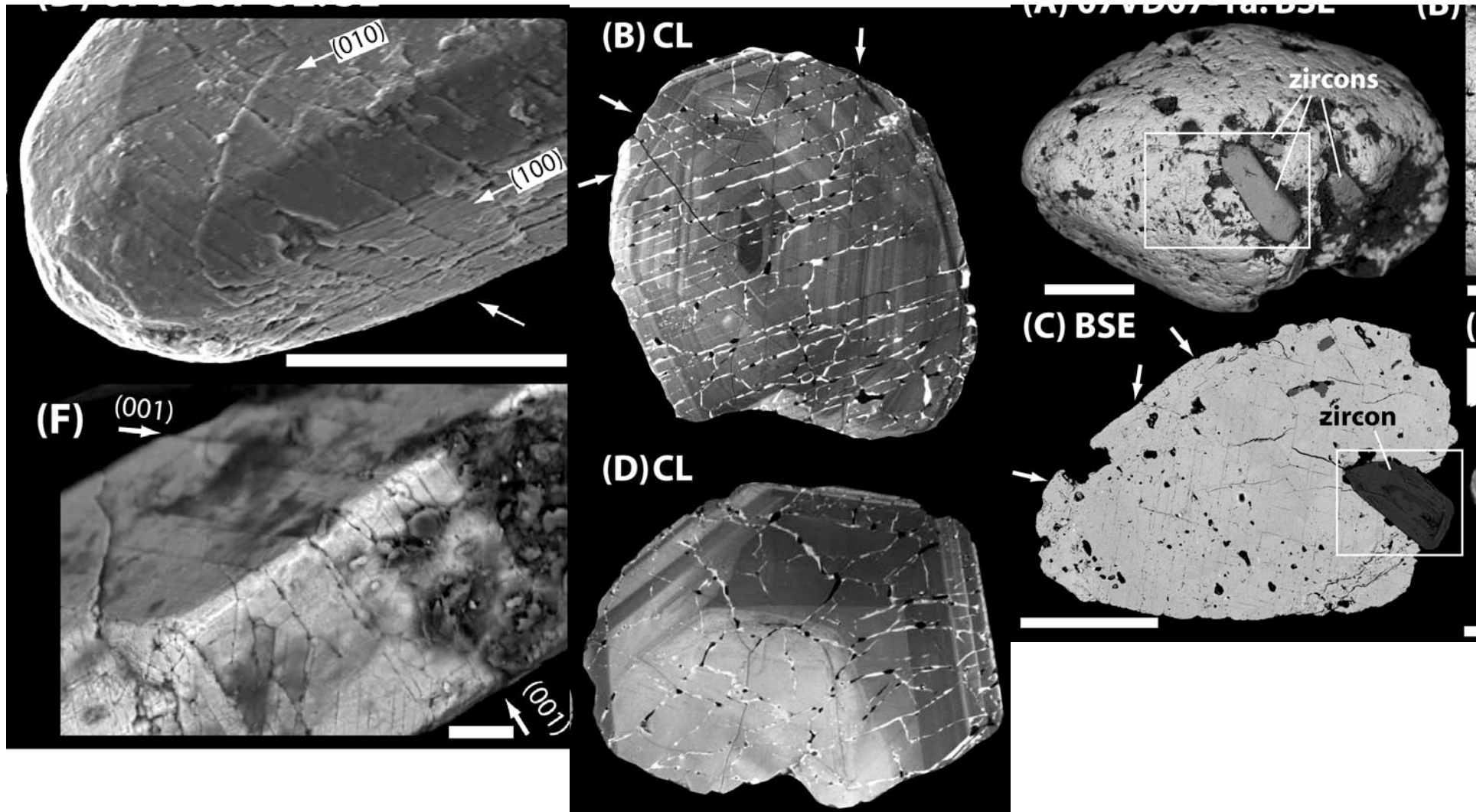
**Triana Ufret-**  
Now a 3<sup>rd</sup> year student at UPRM







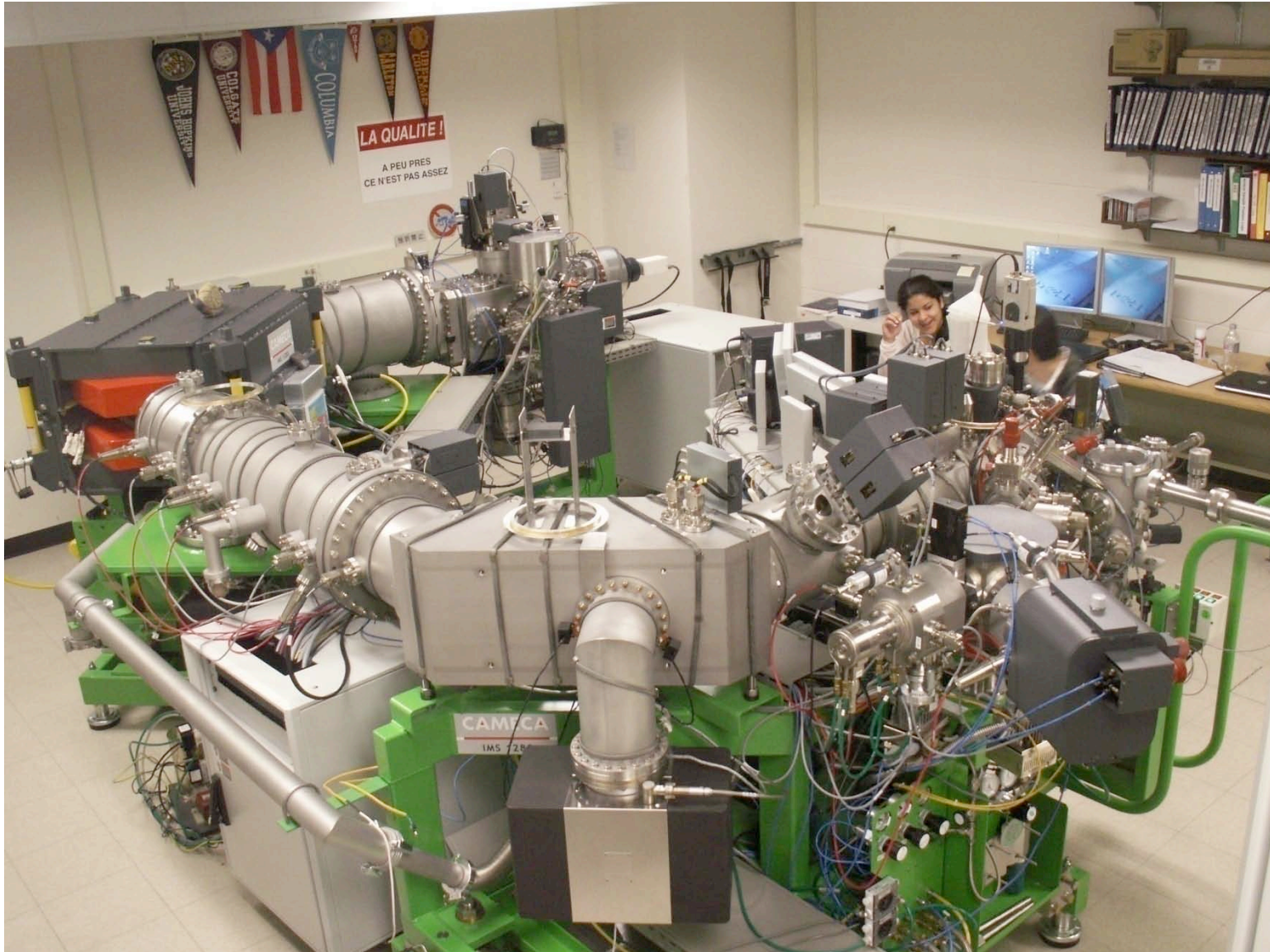
# Exciting science results- detrital shocked minerals



Cavosie et al., in review, GSA

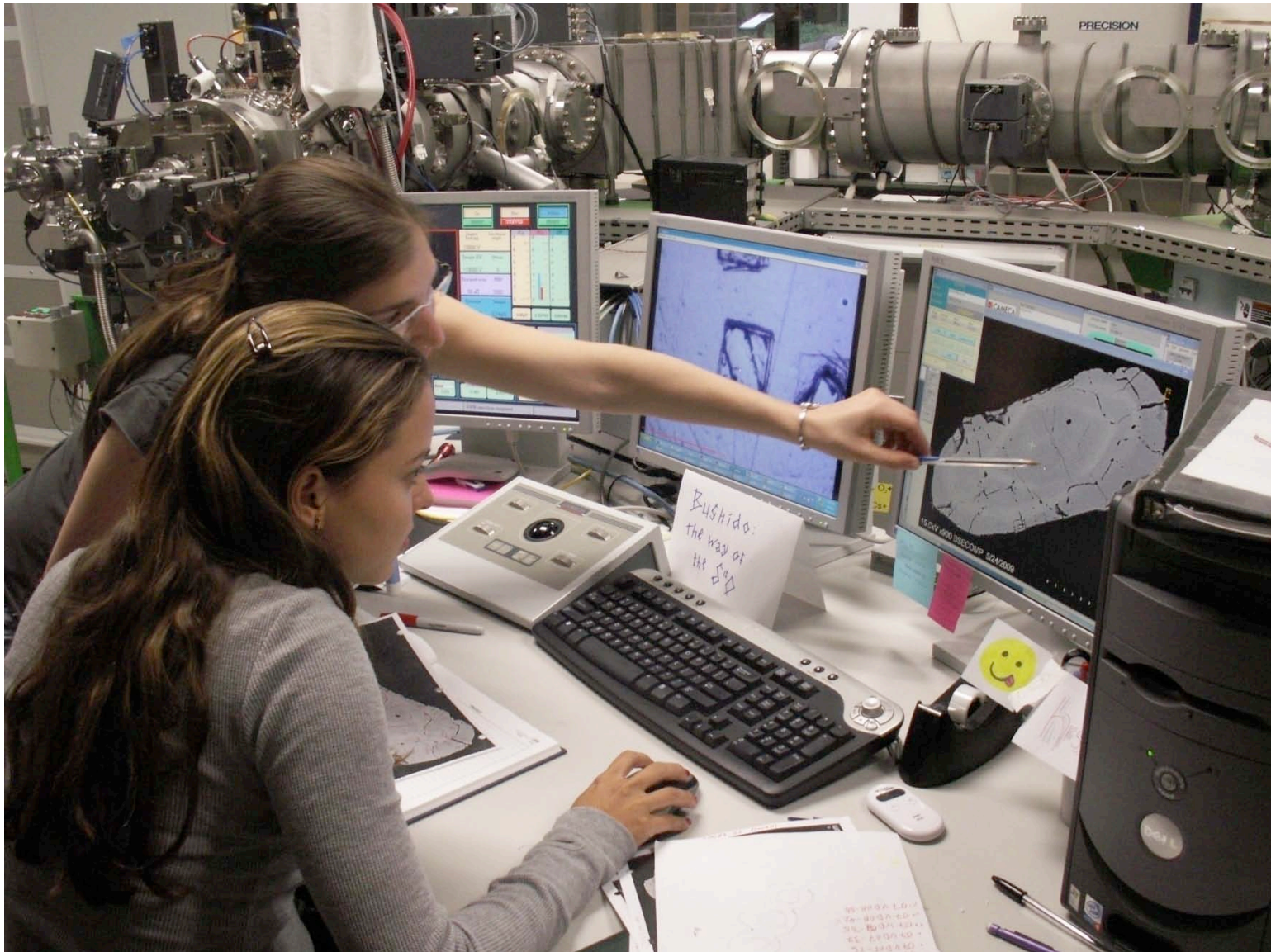
# Wisc-SIMS

## Secondary ion Mass Spectrometer (SIMS)





# High spatial resolution, high precision isotopic analysis of shocked mineral grains from South Africa





# Building A Graduate School Pipeline to UW

**Dayanidi Ortiz (BS, 2007): MS student at UW in Astrobiology**

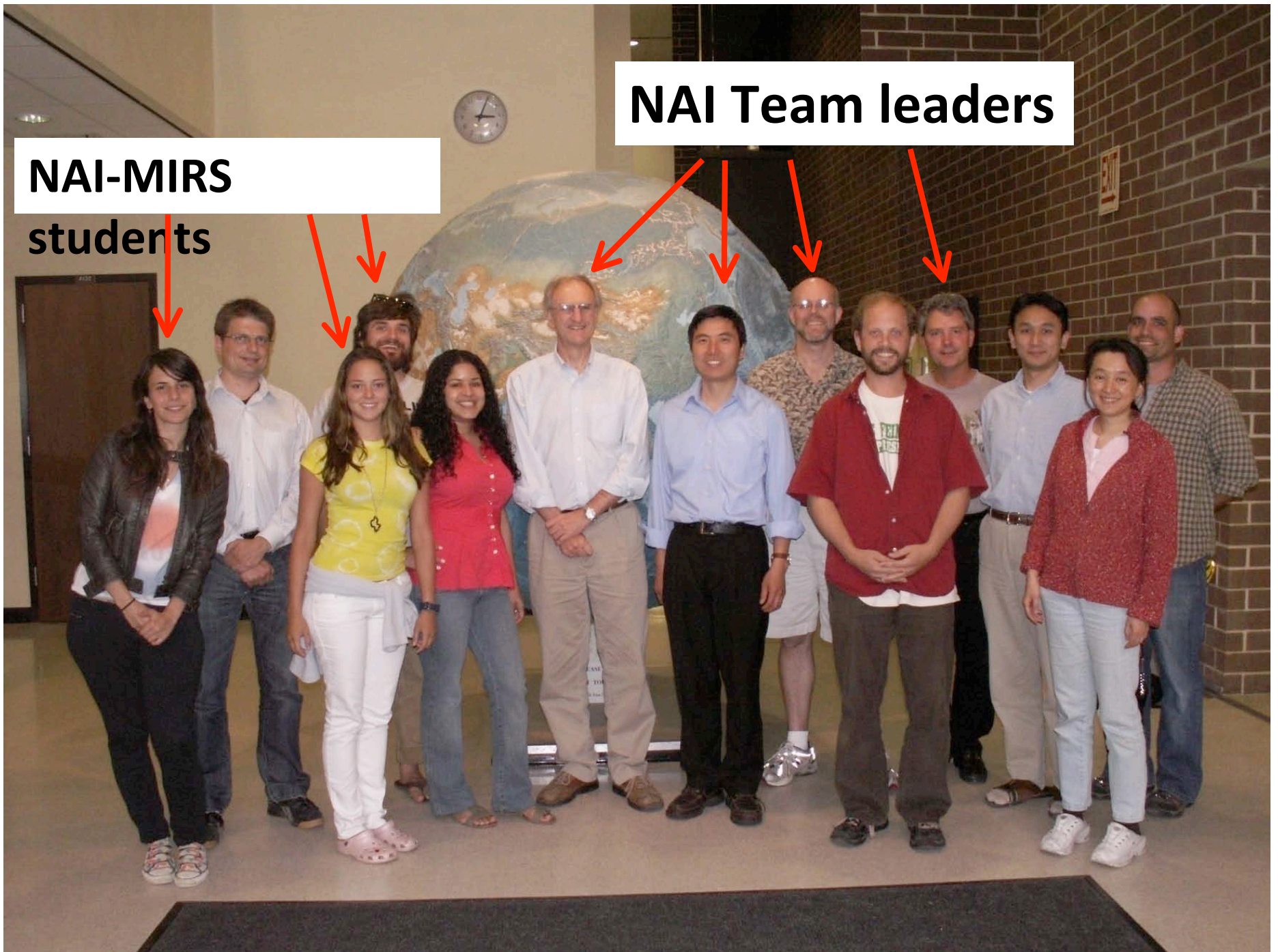
**Triana (middle), and Raiza (right): now MS student at UW**





**NAI-MIRS  
students**

**NAI Team leaders**





# **My outlook on student involvement**

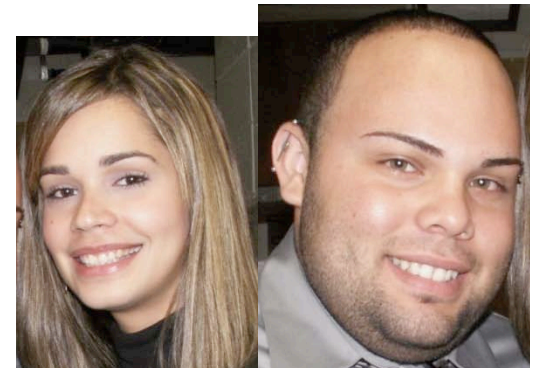
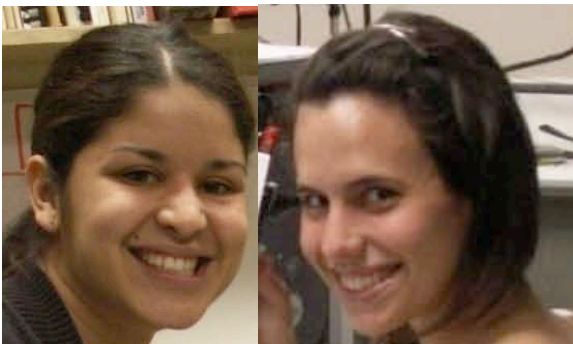
**(1) Faculty need to be resourceful.**

**(2) Language concerns for ESL students**

**(3) Look out, not in. Minority schools are usually broke, conservative, and not research-oriented.  
(these are facts, not obstacles...)**

**(4) Find academic partners involved in NASA research that are interested in minority students.**

**Ex: Univ. of Wisconsin, Univ. of Kansas**



**Oh yeah... the part about  
baseball and aliens...**

**timing is everything**

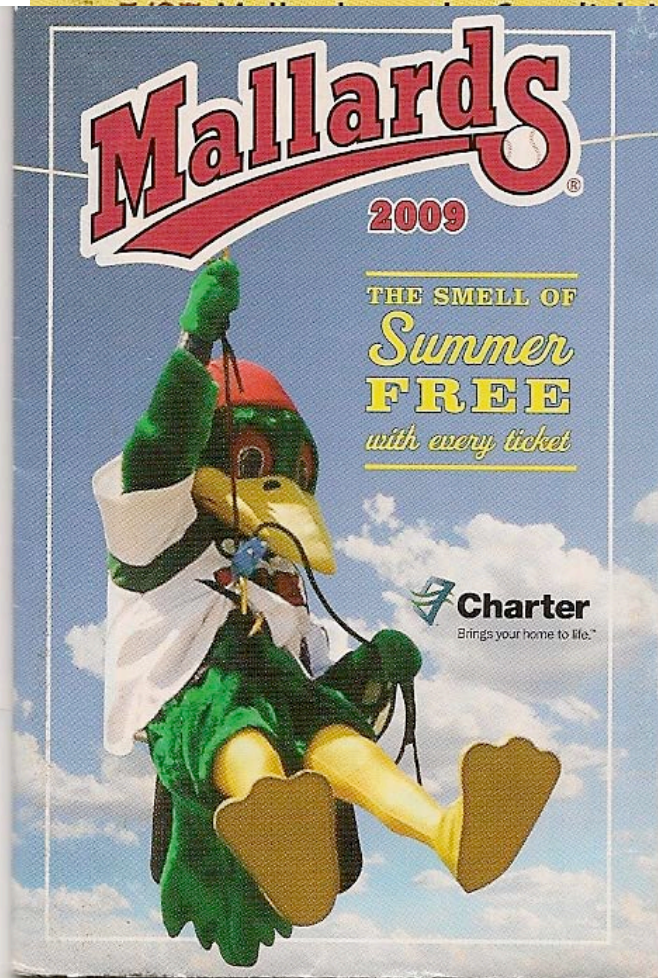
**Brook Norsted, the WARC outreach coordinator, organized  
“Starwars and Astrobiology night” at  
Mallard’s Stadium in Madison, June 5 2009**

**The 6,432 people who attended watched  
baseball and learned about Astrobiology.**

**Most of them beer-drinking, couch  
potatoes..., the perfect outreach crowd**

**The NAI-MIRS students jumped right in...**





## MAY/JUNE

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Musical Night – sce

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Special Appearance

Night (1,000M) & S

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Communications I-shirt Night (500M).

**6/5** UW Geology Museum & NASA Astrobiology Institute Star Wars & Astrobiology Night with General Grievous (Matthew Wood) & educational events all night long. Flying Saucers (250 in the crowd).

## ☆ Fridays ☆

### Duck Pond Superstar Series

There will be a different celebrity at each Friday game.

- June 5: General Grievous from Star Wars – Matthew Wood
- June 12: Johnny Cash's Original Band, The Tennessee Three
- June 19: Marvel Comics Character Wolverine live and in person!
- July 10: Slapshot Night featuring Hanson Brother Steve Carlson
- July 17: Rockin' Ray & the Amazing Skyy Dogs
- July 24: Big Lebowski Night featuring Jeff Dowd who inspired "The Dude" in the movie
- Aug 7: Elvis















# The WARC PI's throw out the first pitch...









# The kids vs. aliens tug-o-war event...





A group of children and adults are gathered on a grassy area, likely a baseball field. In the background, a man in a green polo shirt and a red baseball cap stands with his hands on his hips. To the left, a person in a colorful chicken mascot costume stands. In the center, a person wearing a black hoodie and a green mask is on the ground. Several other children are also on the ground, some wearing green masks. A boy in a red shirt is standing and pointing upwards. The background shows a baseball field with various advertisements on the outfield fence, including "Welcome to", "Home of the Madison", "TDS", "ALLIANT ENERGY", and "AMERITER".



**Not a bad response for an  
Astrobiology outreach program...**

